We claim:

1. A wireless communication receiver for processing a superposed RF (radio frequency) signal containing two or more RF signals occupying overlapping RF bandwidth, the wireless communication receiver comprising:

a wideband receiver for receiving said superposed RF signal;

an analog to digital converter for converting said received superposed RF signal to a superposed digital signal using a common digitizing rate;

a channelizer for each of said RF signals that receives said superposed digital signal and limits said superposed digital signal to a bandwidth that corresponds with the bandwidth of each of said RF signals, providing a bandwidth clipped digital signal for each of said RF signals; and

a signal handling device for each of said RF signals that receives one said bandwidth clipped digital signal, said signal handling device comprising:

a multi-user detection decoder that shares data with multi-user detection decoders in other ones of said signal handling device to decode said bandwidth clipped digital signal to remove conventional and multi-access interference and provide a decoded digital signal; and

a rate adjuster that adjusts a sampling rate of said decoded digital signal to provide an output signal having a predetermined sampling rate.

2. The wireless communication receiver of claim 1, wherein each said channelizer includes a rate adjuster that adjusts a sampling rate of said superposed digital signal to an adjusted common digitizing rate, wherein said adjusted common digitizing rate is a reduced multiple of each said predetermined sampling rate.

3. The wireless communication receiver of claim 1, wherein at least one signal handling device includes a stream separator for forming separate streams from said bandwidth clipped digital signal, each stream based on a set of samples from said bandwidth clipped

digital signal at said predetermined sampling rate and wherein said multi-user detection decoder decodes said bandwidth clipped digital signal responsive to said streams.

4. The wireless communication receiver of claim 3, wherein all but said signal handling device for said RF signal having the largest bandwidth is provided with said stream separator.

5. The wireless communication receiver of claim 1, wherein said common digitizing rate is determined such that said receiver can process a superposed RF signal containing RF signals associated with two or more air interface standards.

6. The wireless communication receiver of claim 1, wherein said two or more RF signals comprise voice and data signals.

7. A wireless communication receiver for processing a superposed RF (radio frequency) signal containing two or more RF signals occupying overlapping RF bandwidth, the wireless communication receiver comprising:

a wideband receiver for receiving said superposed RF signal;

an analog to digital converter for converting said received superposed RF signal to a superposed digital signal using a previously determined common digitizing rate;

a channelizer for at least a first RF signal having the smallest bandwidth of said RF signals that receives said superposed digital signal and limits said superposed digital signal to a bandwidth that corresponds with the bandwidth of each of said at least said first RF signal of said RF signals, providing at least one bandwidth clipped digital signal;

a first signal handling device for said first RF signal that receives a first respective bandwidth clipped digital signal, comprising:

a first decoder that removes interference and decodes said first respective bandwidth clipped digital signal to provide a first decoded signal representing said first RF signal; and

a rate converter that converts the sample rate for said decoded signal to a first standard DSP rate for the said first RF signal; and

a signal handling device for said each RF signal, other than said first RF signal, that receives one of said superposed digital signal and respective said at least one bandwidth clipped digital signal, comprising:

a multi-user detection decoder that receives said first decoded signal from said first decoder of said first signal handling device and shares data with multi-user detection decoders in any other signal handling devices to remove conventional and multi-access interference and decode said one of said superposed digital signal and respective said at least one bandwidth clipped digital signal to provide a decoded signal for said each RF signal; and

a rate adjuster that adjusts the sampling rate of said decoded signal for said each RF signal to a standard DSP rate for said each RF signal.

8. The wireless communication receiver of claim 7, wherein each said channelizer includes a rate reducer that reduces a sampling rate of said superposed digital signal to a reduced common digitizing rate which is a reduced multiple of said first standard DSP rate and a standard DSP rate for said each RF signal.

9. The wireless communication receiver of claim 8, wherein said first signal handling device includes a stream separator for forming separate streams from said first bandwidth clipped digital signal, each stream based on a set of samples from said first bandwidth clipped digital signal at said first standard DSP rate, and wherein said decoder decodes said first bandwidth clipped digital signal using said streams.

10. The wireless communication receiver of claim 7, wherein said common digitizing rate is determined such that said receiver can process a superposed RF signal containing RF signals associated with two or more air interface standards.

11. The wireless communication receiver of claim 7, wherein said two or more RF signals comprise voice and data signals.

12. A wireless communication receiver for processing a superposed RF (radio frequency) signal containing two or more RF signals occupying overlapping RF bandwidth, the wireless communication receiver comprising:

sampling means for sampling said superposed RF signal at a first digitizing rate which is a multiple of a standard sampling rate for each RF signal;

a stream separator that forms a number of streams from said sampled superposed RF signal, each stream based on a set of samples taken at said standard sampling rate for a first RF signal;

a first decoder that decodes said streams to arrive at a digital estimate of said first RF signal and provides a final estimate of said first RF signal from said digital estimates; and

a second decoder that decodes a second RF signal responsive to at least one of said digital estimates and said final estimate.

13. The wireless communication receiver of claim 12, wherein said first decoder decodes said first RF signal responsive to at least one of digital estimates and final estimates of at least one other of said two or more RF signals.

14. The wireless communication receiver of claim 12, further comprising a channelizer for at least said first RF signal that receives said sampled superposed RF signal and limits said sampled superposed RF signal to a bandwidth that corresponds with a bandwidth of at least said first RF signal, providing at least one bandwidth clipped digital signal, and wherein said stream separator forms said number of streams from said bandwidth clipped digital signal.

15. A method for processing a superposed RF (radio frequency) signal containing two or more RF signals occupying overlapping RF bandwidth in a wireless communication receiver, the method comprising:

receiving said superposed RF signal;

converting said received superposed RF signal to a superposed digital signal using a previously determined common digitizing rate; and

for each of said RF signals:

limiting said superposed digital signal to a bandwidth that corresponds with the bandwidth of said respective RF signal, providing a bandwidth clipped digital signal;

using multi-user detection responsive to synchronized data received from other RF signals to decode said bandwidth clipped digital signal to remove conventional and multi-access interference and provide a decoded digital signal; and

adjusting a sampling rate of the decoded digital signal to provide an output signal having a predetermined sampling rate.

16. A method of processing superposed RF (radio frequency) signals comprising:

sampling said superposed RF signals at a first digitizing rate which is a multiple of a standard sampling rate for each RF signal of said superposed RF signals;

for a first RF signal of said superposed RF signals, forming a number of streams from said sampled superposed RF signals, each stream based on a set of samples at said standard sampling rate for said first RF signal;

decoding each of said streams to arrive at a digitized estimate of said first RF signal;

deriving a final estimate from said digitized estimates; and

decoding other RF signals of said superposed RF signals responsive to at least one said digitized estimate or said final estimate.

17. The method of claim 16 further comprising, for each RF signal and prior to decoding of said RF signal, filtering said superposed RF signals to limit said superposed RF signals to a bandwidth occupied by said RF signal of said superposed RF signals.

18. A computer readable medium containing computer executable code for adapting a wireless communication receiver for processing a superposed RF (radio frequency) signal containing two or more RF signals occupying overlapping RF bandwidth to:

receive said superposed RF signal;

convert said received superposed RF signal to a superposed digital signal using a previously determined common digitizing rate; and

for each of said RF signals:

limit said superposed digital signal to a bandwidth that corresponds with the bandwidth of said respective RF signal, providing a bandwidth clipped digital signal;

use multi-user detection responsive to synchronized data received from other RF signals to decode said bandwidth clipped digital signal to remove conventional and multi-access interference and provide a decoded digital signal; and

adjust a sampling rate of the decoded digital signal to provide an output signal having a predetermined sampling rate.

19. A signal handling device for processing an RF (radio frequency) signal from a digital superposed RF signal, said digital superposed RF signal sampled at a first digitizing rate and having two or more RF signals occupying overlapping RF bandwidth, the signal handling device comprising:

a decoder that decodes said digital superposed RF signal to arrive at a first estimate of said RF signal and receives first estimates of other RF signals from other signal handling devices and, responsive thereto, provides a second estimate of said RF signal; and

a rate adjuster that adjusts a sampling rate of the second estimate from said first digitizing rate to provide an output signal having a second digitizing rate.

20. The signal handling device of claim 19 wherein said first digitizing rate is a multiple of a standard sampling rate for each RF signal of said digital superposed RF signal and said signal handling device further comprises a stream separator that forms a number of streams from said digital superposed RF signal, each stream comprising a set of samples taken at said standard sampling rate for said RF signal and wherein said decoder decodes said streams to arrive at said first estimate of said RF signal.